

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

1. (Previously Presented): A thick-film electric heater, comprising:
 - a) a thermally conductive non-flat substrate surface;
 - b) a silk-screened dielectric layer applied on said substrate surface;
 - c) a resistive layer applied on said dielectric layer thereby forming a circuit for the generation of heat, the resistive layer having at least one resistive trace made of thick film ink in a pattern that is discontinuous circumferentially;
 - d) at least a pair of silk-screened contact pads applied in electrical communication with said resistive layer for electrical connection to a power source;
 - e) an insulation layer applied over said resistive layer; and
 - f) wherein the thermally conductive non-flat substrate surface has a thermal coefficient of expansion substantially the same or slightly lower than the dielectric and resistive layers.
2. (Previously Presented): The heater of Claim 1, further comprising a connector housing for connection of a contact to each of said contact pads.
3. (Previously Presented): The heater of Claim 1, where said non-flat surface is cylindrical.
4. (Original): The heater of Claim 1, where said substrate further comprises a longitudinal slot running the entire length of said substrate.

5. (Previously Presented): The heater of Claim 1, where said resistive layer further comprises at least one low-resistance conductive trace in electrical communication with the at least one resistive trace, thereby forming an optimized heating generating pattern.
6. (Cancelled).
7. (Currently Amended): The heater of Claim 5, where said conductive trace includes a silk-screen conductive trace that is located ~~is silk-screened~~ on said dielectric layer.
8. (Currently Amended): The heater of Claim 1, where said resistive layer trace includes a silk-screened resistive layer trace that is ~~is silk-screened on to said~~ located on said dielectric layer.
9. (Currently Amended): The heater of Claim 1, where said resistive layer includes a directly printed resistive layer that is located on ~~is direct printed onto~~ said dielectric layer.
10. (Previously Presented): The heater of Claim 2, where said connector housing further comprises a locking detent that engages a locating hole on said substrate.
11. (Original): The heater of Claim 10, where said locking detent is selectably removable from said locating hole.

12. (Original): The heater of Claim 10, where said detent and said locating hole are in a predetermined arrangement relative to said contacts, thereby ensuring electrical communication of said contacts to said contact pads when said detent engages said hole.

13. (Previously Presented): The heater of Claim 2, where said connector housing further comprises a key for slidably engaging a longitudinal slot in said substrate, thereby aligning radially said contacts with said contact pads.

14. (Currently Amended): The heater of Claim 2, where said connector housing includes ~~is made from~~ ceramic material.

15. (Original): The heater of Claim 1, where said substrate is a nozzle body.

16. (Original): The heater of Claim 1, where said substrate is made from steel.

17. (Original): The heater of Claim 1, where said dielectric layer has a dielectric strength between 1000 VAC to 1500 VAC and an insulation resistance of at least 100 mega-ohms.

18. (Original): The heater of Claim 1, where said substrate and said dielectric layer and said resistive layer and said insulation layer have substantially the same coefficient of thermal expansion.

19. (Original): The heater of Claim 18, where said substrate has a slightly lower coefficient of thermal expansion than said dielectric, resistive and insulation layer.

20. (Currently Amended): The heater of Claim 1, where said resistive layer includes a photoformed resistive layer that is located on said dielectric layer ~~is applied to said dielectric layer by photoforming.~~

21. (Currently Amended): The heater of Claim 1, where said resistive layer includes a laser-formed resistive layer or an abrasive-etched resistive layer ~~is formed by laser or abrasive etching.~~

22. (Currently Amended): The heater of Claim 2, where said contact includes ~~is made from~~ gold plated steel.

Claims 23-27 (Canceled).

28. (Previously Presented): An injection mold runner nozzle having a co-axially disposed cylindrical heater comprising:

- a) a cylindrical, thermally conductive substrate having a smaller coefficient of thermal expansion than that of said nozzle, thereby causing said substrate to clamp onto said nozzle as said nozzle and said substrate heat up;
- b) a dielectric layer applied on said substrate;
- c) a resistive layer applied on said dielectric layer thereby forming an electrical circuit for heat generation, the resistive layer having at least one resistive trace made of thick film ink in a pattern that is discontinuous circumferentially around the substrate;
- d) at least a pair of contact pads applied in electrical communication with said resistive layer for electrical connection to a power source;
- e) an insulation layer applied over said resistive layer and

- f) wherein the cylindrical, thermally conductive substrate has a thermal coefficient of expansion substantially the same or slightly lower than the dielectric and resistive layers.

29. (Previously Presented): The nozzle of Claim 28, wherein the heater further comprises an annular connector housing that slidably engages said substrate for mechanical connection of a contact to each of said contact pads.

30. (Previously Presented): A thick-film electric heater, comprising:

- a) a thermally conductive non-flat substrate surface;
- b) a dielectric layer applied on said substrate surface;
- c) a resistive layer applied on said dielectric layer thereby forming a circuit for the generation of heat, the resistive layer having at least one resistive trace made of thick film ink in a pattern that is discontinuous circumferentially;
- d) at least a pair of contact pads applied in electrical communication with said resistive layer for electrical connection to a power source;
- e) an insulation layer applied over said resistive layer; and
- f) wherein the thermally conductive non-flat substrate surface has a thermal coefficient of expansion substantially the same or slightly lower than the dielectric and resistive layers.

31. (Previously Presented): The heater of Claim 30, where said at least one resistive trace is a plurality of traces configured to optimize an axial thermal profile of the heater.